



U N I V E R S I T É  
**Concordia**

AUG 05 1994

**Centre d'Études en Neurobiologie Comportementale**

April 30, 1994

Dr. Yves Rousseau  
FCAR  
3700 rue du Campanile,  
bureau 102  
Saint-Foy, Québec, G1X 2G6

Dear Dr. Rousseau

I have received your letter informing us of the results of the 1994-1995 competition for the FCAR Research Centers program. We are shocked and dismayed by the drastic cut in our grant from \$235,000 per annum from 1989-1994, to \$130,000 per annum for the next three years and by the award of very limited capital funds. It is difficult for us to understand the reasons for these decisions or for the negative remarks made in the report sent to us. In view of the positive reports of the external experts, we can only surmise that these decisions resulted from the absence of experts on the Visiting Committee who would have been familiar with the nature of research engaged in by Center members.

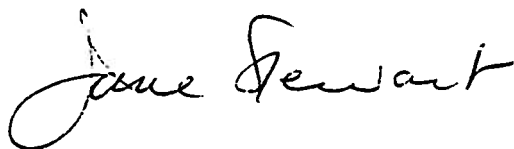
After consultation with our Office of Research Services, I am writing to appeal these decisions. We feel strongly that statements made in the report sent to us, and upon which decisions were based, reflect an unfortunate lack of communication and understanding. It appears to us that the Visiting Committee was not adequately qualified to evaluate the work of the Center for Studies in Behavioral Neurobiology. The review process has denied us the benefit of evaluation by peers that has been accorded us in the past and that was accorded other applications in the same competition.

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To set the record right, I will try in the enclosed "Response" to redress errors of fact, to explain how it is we operate, and to correct misunderstandings. It is important to us that these observations become part of the dossier on the Center for Studies in Behavioral Neurobiology in order that misconceptions not be perpetuated. I am sending you this document in English now; for the purposes of the dossier, a translation into French will follow.

It is with sincere regret that I must write to you concerning what has come to pass. There are, however, serious consequences of the critical evaluation that we have received this year - the statements to the effect that there are serious weaknesses, and the classification "une subvention de redressement." Let me say, Dr. Rousseau, that we have admired the goals of FCAR to foster the training and career development of young researchers in Quebec in an atmosphere of cutting-edge, internationally competitive science. We have worked to create such an atmosphere, and we believe that the achievements of our members and students attest to the fact that we have been successful. The support of FCAR and its programs have helped us achieve these goals. We are eager, therefore, to maintain your continuing support and favorable regard. I ask you to consider the attached "Response" to the report on the Center for Studies in Behavioral Neurobiology. When you have had some time to familiarize yourself with our case, we would like to arrange to meet with you. I hope to hear from you about this matter in the near future.

Yours sincerely,

A handwritten signature in cursive script, reading "Jane Stewart".

Jane Stewart  
Director

cc. E.M. Besso, Director Research Services  
Dr. Peter Bird, Associate Dean Research, Arts and Science  
Dr. Tien Bui, Associate Vice-Rector Research

## **A RESPONSE TO THE EVALUATION OF THE CENTER FOR STUDIES IN BEHAVIORAL NEUROBIOLOGY (CSBN), 1994.**

### **A Bit of History**

The CSBN has been funded as an FCAR Center for 11 years. The initial grant awarded in 1983 was for \$ 90,000 per annum for three years. At that time, the total funding for research coming to the Center from external agencies, excluding the FCAR Center funds, was approximately \$450,000. In 1986, we were awarded a grant for three years at a level of \$136,000 per annum and were ranked first in the competition. In 1989 we were awarded a grant for five years at \$235,000 per annum, ranking second out of eleven funded, only four of which were funded for five years. During these years we have grown from a group of four core members, with 40 members, to a group of eight core members, with over 75 members. Our total funding for research from external granting agencies, excluding FCAR Center funds, is now \$1,200,000. **A list of new grants and renewals of grants pending at the time of the site visit in November is attached.** These numbers represent only the bare facts of our existence. Most critical to an evaluation of our role as a center is our achievements in research and in the training of young researchers.

### **The Evaluation Procedure Followed in 1993**

In April 1993, we submitted to FCAR an application for renewal of the grant to the CSBN. In September 1993, we were informed that we would be receiving a site visit in November from the Centers Program Committee. We understood from the letter we received at that time that this evaluation process was in the category of "legère" meaning that there was no question about the scientific program of the CSBN or about its scientific achievements. This impression was reinforced by the fact that the Visiting Committee did not include experts in neuroscience or behavioral neuroscience. At the time of the site visit we received no indication that serious weaknesses were perceived, and there were no questions asked of the Director or other Center members that would have allowed clarification of perceived problem areas. The task of evaluating and ranking applications from Centers having diverse programs is difficult if not impossible in the absence of experts who understand the nature and scope of the field of study, who know the stature of people in the field, and who know the impact of the research of

members and their students. Clearly the presence of external experts familiar with the areas of research carried on in the Center and the constraints on the mode of conducting such research would have contributed greatly to the evaluation.

In the following sections some of the issues that are listed under recommendations in the report sent to us are addressed.

### **The Scientific Program and the Quality of the Researchers**

The reviews by the experts in the field are glowing in their praise. Nowhere in the reports of the external experts or in the remarks of the Visiting Committee is there any criticism of the basic themes of study of the CSBN. They commend the breadth of expertise of the researchers, the diversity of the approaches taken in the Center to the problem of understanding the neurobiology of motivation in mammals, and the expertise represented by the new core members who have joined the Center in the past five years. Each of these new members was mentioned by at least one of the external experts as adding a significant new dimension. Each is seen to bring a new set of skills and expertise to the problem of identifying the neurobiological basis of motivated behavior. **These additions to faculty have been carefully planned by the Center Director and Executive and have been made, in part, in response to suggestions of past FCAR Visiting Committees.**

It would perhaps be informative to review our process for hiring new faculty and for making additional appointments to the Center. In the case of newly hired faculty, the search committee is made up of the Center Executive and members from the Department of Psychology and either Biological Sciences or Chemistry and Biochemistry, depending on the expertise of the individual sought. Applicants being interviewed spend time with graduate students and postdoctoral fellows as well as with faculty members. At the time of the addition of Dr. Pfaus, we explicitly sought out an individual with the molecular biological skills who was interested in the problem of motivation. He has already made a difference to the power of our work and has set off a series of collaborations between members and between students and postdoctoral fellows in the different laboratory groups within the Center and well as outside the Center. Similarly, Dr. Gratton brought new capabilities for the use of in vivo electrochemistry in freely moving animals. Students

and researchers from other laboratory groups within the Center have learned these techniques from him and have collaborated on research projects with him. He is now beginning to do electrophysiological recording in the freely moving animal. Dr. Amir, with his background in neurochemistry and neuropharmacology from the Weizmann Institute brought his expertise not only in the study of behavioral and physiological regulatory processes, but also his knowledge of neuropeptides and the pharmacology of glutamate and nitric oxide. He too has opened up new possibilities for students within the Center to use immunohistochemical techniques in the study of the neuroanatomy of the systems implicated in their research. Finally, after a series of developing collaborations with Drs. Shizgal, Amir and Stewart, we made a decision to invite Dr. Woodside to join as a core Center member in 1993. Dr. Woodside, as has been pointed out by one external expert, adds important new areas of study in the field of appetitive motivation. She has expertise in the study of maternal behavior, nutrition and feeding, and in the role of gonadal and pituitary hormones in these processes. Thus we are puzzled by the statement "il faut pour cela se fier au passé des chercheurs senior et au recrutement récent d'un jeune chercheur." It can be pointed out that the age range of the four more "junior" researchers is 35 to 47; that of the four "senior" researchers is 43 to 60 and none of these shows signs of slowing down. It will be necessary, however, considering severe budgetary restrictions, to present to the University the strongest possible case for the replacement of these individuals should any of them decide to retire in the next few years. Planning now for these eventual changes has already been discussed with the Dean. As in the past, the University lists the CSBN among its top priorities and has recently taken steps as part of the Capital Development Campaign to find support for a Distinguished Chair within the Center.

There was only one reference in the reports from the outside experts to the lack of clarity of our plans for future work, and this one is hard for us to understand. We have outlined in each section of the application how and along what lines our work is developing. We have emphasized the incorporation of new techniques to the understanding of neurochemical mechanisms underlying motivated behavior. We have presented the broad picture of the processes that we are continuing to study, the new areas that are being opened up and the new methods that we have developed for studying them. The more specific details of the working hypotheses underlying each area of study, and the specific ways of approaching each, have

obviously been presented in sufficient detail in individual and team grant proposals for us to continue to persuade our peers of the importance and creativity of what we are doing. In addition, the external expert reviewers most familiar with the areas of study of the CSBN appeared to have no difficulty understanding and lauding the directions that we are taking. To quote from one expert -- "the position of the Centre as the world's leading scientific collection studying the neurobiological basis of motivated behavior would be unquestioned if the projects on natural motivations come to equal the stature of the drug and self-stimulation research lines. The seeds allowing this to happen have been sown." To quote another - "the relation between the different lines of research is strong. The interests and focus of the individuals is likely to yield extensive cross fertilization and collaboration both experimentally and theoretically.....I would rate the probability and level of success of this programme very highly." Surely these comments speak positively of the future.

It is stated in the recommendations that the multidisciplinary character of the work seemed weak on two levels. The first mentioned is that with one exception all members were located in one department. This is true and reflects the historical reality of the Center. This fact alone, however, does not mean that the work being done is not multidisciplinary in nature. The variety of approaches that we are taking to problems, and of the range of disciplinary backgrounds of our members have already been outlined. It is possible that it may not have been understood by the members of the Visiting Committee how multidisciplinary the field of psychology has become. The subfield of behavioral neuroscience and neurobiology, in itself, incorporates people who were trained at some stage in their careers in motivation, learning perception, cognitive processes, behavior genetics, neuroanatomy, neurochemistry, neuropharmacology, psychopharmacology, developmental psychobiology and today in the application of molecular biology. We are unique in having been able to assemble a group with the range of background that we have. We have three members who have specialized in psychopharmacology throughout their careers (Amit, Stewart and Wise) and, thus, we are puzzled by the comment in the report of the Visiting Committee that we should acquire a psychopharmacologist. Amit is an expert in both the fundamental research and clinical aspects of this field. Stewart started her career in the pharmaceutical industry and has worked on drug actions throughout her career and was named Distinguished

Psychopharmacologist by the Canadian Psychological Association in 1988. Wise has worked in the field of psychopharmacology throughout his career. In 1989 he was selected by the National Institute for Drug Abuse (NIDA) to receive a Merit Award from the Alcohol, Drug Abuse and Mental Health Administration. This award carried with it an extension of his NIDA operating grant, awarded for 5 years in the first instance, for an additional 5 years. Shizgal is a behavioral neuroscientist with expertise in electrophysiology and psychophysics. He has recently been awarded the "Prix NutraSweet 94" for his research in the field of feeding behavior. Gratton did postdoctoral training in the Department of Chemistry, University of Colorado, where he worked in the development of voltammetric techniques for measuring neurotransmitter functions in freely moving animals. Amir is a neuropharmacologist with expertise in peptides in the central nervous system, and is presently one of few people studying the importance of the newly discovered diffuse transmitters, nitric oxide, in behavioral processes. Woodside, Pfaus and Stewart all have expertise in the study of the role of steroid hormones in development and behavior. Pfaus has written extensively on the pharmacology of sexual behavior; following his graduate training at UBC, he did postdoctoral training at Rockefeller University with Dr. Donald Pfaff, where he studied the use of molecular biological methods in the study of behavior. This collection of individuals is rare if not unique for a department. The fact that their academic appointments reside there should not be seen as a handicap. It should be noted in this regard that of all the collaborating scientists who have come to the Center over the years, most are not psychologists. There have been chemists, pharmacologists, and physiologists. They all have found the atmosphere to be remarkably multidisciplinary. Furthermore, we have taken into our program a number of students with backgrounds in disciplines other than neuroscience and psychology.

The second point raised is that the level of collaboration between individuals is low. This is just not true. The nature and extent of these collaborations was outlined in the proposal, and will be elaborated further below.

We can point, as well, to the remarkable strength of several of our younger members. Gratton was an NSERC funded University Research Fellow and has just been awarded the Chercheur Boursier from FRSQ. Among our associate members are Drs. Rochford and Rompré, both of whom hold the Chercheur Boursier award from FRSQ.

## The Functioning of the Center

There appear to be questions about the organizational structures of the Center. A response to these questions can be made at the philosophical level, where issues arise about how science, and training for science, is best accomplished. These questions can be addressed, as well, at the level of practical every day operation, where issues arise about the working arrangements most suitable to our particular field of study.

Philosophically, we believe that each full-time researcher in the academic milieu must be given the opportunity to develop independently as a researcher. Each individual must be able to make his mark on the field and be able to demonstrate to his peers that he is capable of creative thinking and productive independent research. Furthermore, we feel, that only by creating individually successful scientists can we guarantee the future of the Center. If the Center were to become too centrally focused under the direction and creative skills of one individual, the loss of that person might lead to the rapid disintegration of the Center. We are in the fortunate position that the Directorship can change without creating problems. The style of leadership in the Center has not changed over the past eleven years, though the Director has. The Director does not engage in "micromanagement" from the directors office. Leadership is by working example and through the power of ideas. The criticisms of the Director are thus criticisms of an operational philosophy that has worked well for us, and that is perceived by the members to be a positive feature of how we function. We find it difficult, therefore, in view of past evaluations of our scientific achievements to understand the gloomy forecasts echoed in the report of the Visiting Committee, to quote "compte tenu du succès des membres seniors du Centre, on peut comprendre cette attitude, mais il est risqué qu'à moyen et long terme elle conduise à l'appauvrissement de la programmation de recherche du CENC."

In our situation, although the Director and senior members assist new Center members in setting up their laboratories and try to provide them with sufficient funds to support graduate students and their research, we do not tell them what to do. The full-time researchers that we have added have enriched the Center program through the diversity of their expertise. They have each added a new



dimension to the study of the neurobiological basis of motivated, goal-directed behavior. The attraction of the Center to new members is the opportunity for collaboration and the collegiality that is present.

## **Collaboration**

The recommendations state that the researchers seem to work separately. A close reading of our application and a better understanding of our mode of functioning within the Center will show this not to reflect reality. Collaboration occurs between Center members and between Center members and scientists outside the Center. The collaborations between core members of the CSBN emerge from mutual interests in problems and the need for new approaches to specific questions. **These collaborations have increased in number over the years as the breadth of knowledge required to solve a problem has increased.** These are reflected in recent publications where there are numerous cases of joint authorship between Center members. **A list of publications for 1993-1994 is appended.** Much more collaboration occurs, however, than is reflected in names on publications. We can ask, as well, who is served by multiple authored papers? Certainly not the young researchers, the postdoctoral fellows or graduate students. The addition of senior names to papers because people gave advice, suggested an experiment, provided technical assistance or equipment, may only mask the contribution of the primary actors, and is likely to be a target for criticism by peer reviewers.

The Director and senior members see as their role the creation of the opportunities for things to happen, and the encouragement of collaboration and new directions for research. Discussion of new directions, of new findings from the lab, of new lines of research discussed at recent meetings, of new techniques that might apply to answering a question all constitute important lines of collaboration. When a particular research project comes to a stage where collaboration appears fruitful, it occurs. More often than not, these collaborations involve graduate students and postdoctoral fellows.

At present, Amir is collaborating with Amit, Shizgal and Stewart; Pfaus is collaborating with Shizgal and Wise; Stewart is collaborating with Rompré and Woodside, as well as Amir; Shizgal is collaborating with Amir and Woodside, as well as Pfaus; Wise is

collaborating with Gratton and Rompré, as well as Pfaus. **Many of these collaborative projects are evident in the accompanying list of publications for 1993-1994.** In almost every case, our postdoctoral fellows have ended up collaborating on projects with two or more scientists from different laboratories. Scientists from outside the Center who have come to work for a year or more have each introduced new approaches to our common problems and have, in turn, learned from those approaches taken within the Center. Kelsey collaborated with Wise, Stewart and Shaham; Dib with Amir and Shizgal; Kiyatkin with Gratton and Wise; Tsibulski with Amit and Smith; Nencini with Stewart; Badiani with Stewart and members of the Wise group, Noel and Leone. Rossetti, who just arrived from Italy, brings a wide breadth of expertise in chemistry and pharmacology, and is already collaborating and interacting with several Center members including Wise and Stewart and members of the Chemistry and Biochemistry Department. The publications for 1993-1994 reflect these as well.

It is suggested that we need to increase the number of members (from other universities and hospital research settings?) and to physically integrate the present members. These suggestions appear somewhat contradictory. If it is perceived a problem that two of our core members are not physically located in the same building now, would it not present similar problems if new core members with appointments at other universities and research centers in hospitals were added? A close reading of our list of collaborations between members of the Center and researchers outside (outlined in the application, p. 34) reveals that we have established these with a number of people in the Montreal and Quebec region as well as in other parts of Canada and the world. Interestingly, many of these have developed with scientists who have visited the Center as colloquia speakers. **An updated list of ongoing collaborations is appended to this document.** One important benefit of these external collaborations has been to enable our students to spend time in the laboratory of other scientists. For example, several students have made use of our long-standing links with the Douglas Hospital Research Center. Funk, Leyton, Museo and West went there for either practica or to acquire particular laboratory skills during their Ph.D. training. Leyton, Mitchell, Noel, Rochford and West spent some time there for postdoctoral studies. Drs. Gratton, Meaney, and Rochford, who now hold full-time faculty positions in the Department of Psychiatry, McGill University, Douglas Hospital Research Center, obtained their Ph.D. degrees at the CSBN. Through

the collaboration set up by Amit with Drs. Negretti and Gill (a former CSBN student) at the Montreal General Hospital, Addiction Research Unit, Boyle and Koechling did practica and research there as Ph.D. students. As a result of the collaborations between Stewart and Kolb, at Lethbridge, Forgie is there for postdoctoral training.

### **Forums for Interchange - Laboratory Meetings, Seminars and Colloquia**

In practical terms, we have a four-tiered system for informal and formal interactions between center members and researchers in training; weekly laboratory meetings, weekly meetings of the Center, Center colloquia, and formal courses given by Center faculty in the graduate program. Our mode of operating arises, in part, from the size of the laboratories and from the nature of behavioral research in animals. Most of the core laboratories have sufficient numbers of actively working people - technicians, students, postdoctoral fellows and professionals - to hold meetings weekly to discuss findings and to plan details of future projects. These lab meetings serve as forums for students to present preliminary results and thereby to practice speaking to groups of 8-15 people before making presentations to a wider audience. In addition, these meetings are used for the detailed review of new literature and occasionally for didactic presentations. In cases where a core laboratory group has yet to reach sufficient numbers to make such meetings functional, students and faculty join another group on a regular basis. Student and faculty are always welcome to attend specific meetings of other lab groups. Because the number of people in the Center is over 70, little practical planning can be done in a meeting of the whole. We reserve time once a week for the larger informal research seminars at which presentations are made by core members, postdoctoral fellows, senior students, and visitors either from other local universities and hospital research groups or from out of town. We hold a regular colloquium series to which we invite experts from all over the world in disciplines of immediate or potential relevance to research in the CSBN. Information about the affiliations of these individuals and the titles of their presentations are appended. (We note that experts in the field would have been able to recognize the names of these individuals and to identify their fields of expertise.) The colloquium speakers usually agree to stay with us for two days and to present a second talk to the informal weekly Center seminar.

By tradition, the graduate students are responsible for taking the speakers to lunch; this arrangement provides the student with the opportunity to meet directly with these visitors. **The colloquium series is widely advertised in the Montreal community and draws students and faculty from within the Department of Psychology, the other Science Departments of the University, and well as from other Universities and hospital research settings in the city. These are all informal activities of the Center that serve to unify our members. Finally, Center students are together in graduate seminars taught by Center faculty. A listing of these was provided in the application in section 8.5, p 26.**

**Students and postdoctoral fellows share offices in which individuals from different lab groups are placed in close physical proximity. We have a number of common areas for the kinds of activities that can be done in open laboratories, contrary to what is stated in the report of the Visiting Committee. These include, a terminal room and large neuroanatomy and neurochemistry laboratories where workers from different groups work side-by-side, a shared computer terminal room, a reception area where people from different laboratories join each other daily for lunch and discussion, and a darkroom and workshop. We share a major computer facility and network that supports the collection and data analysis from every laboratory and serves as a communication network within and outside the Center. We have access to Medline and other data bases through joint contributions from the grants of Center members. As a group, we discuss ways of sharing in the purchase of new equipment and service contracts from our individual research grants and of providing sufficient practical access to common facilities such as pure water sources, cryostats and microtomes, centrifuges, and radioactive detectors. Students from one laboratory group learn specific techniques from senior researchers, technicians and students in another laboratory group. Students and professional researchers are encouraged by the availability of people and facilities to get things done, and they do.**

## **Graduate Students**

The recommendations refer to the number of graduate students and to the number of graduates in the past three years. **Some updated**

figures are appended. In the Center and in the Department of Psychology where most of our students get their degrees (though there are exceptions), students are admitted to the Masters degree in numbers limited by several considerations. We work with an apprenticeship model for graduate study. The laboratory group with less than 15 members is our favored structure for developing young independent investigators, and for giving direction through the merit of ideas rather than the authority of the individual. We admit only those students whom we consider are suitable for doctoral study. Though we retain the Masters degree, it is assumed that most students will continue their research until the completion of the Ph.D. Some students come to us from other universities after having completed a Masters degree. In the case of junior faculty, assistance will be given for student support if necessary, but we do not always judge it in the best interest of the faculty member to take more students that can be handled well. Each student is admitted in the first instance for work with a particular supervisor. Some students do change supervisors, but most stay in the Center until completion of the Ph.D. Attrition is minimal. The number of students actually graduating in any arbitrarily defined period will vary, but on the whole the number is relatively steady. We guarantee each student without scholarships a living stipend at a level in the range of FCAR graduate fellowships, at a minimum. Funds come from a variety of sources, including individual and team research grants, teaching assistantships, and FCAR Center funds.

To date, most of our Ph.D. graduates have been successful in obtaining postdoctoral fellowships or stipends. They are eagerly sought after. By the time they graduate they have already made many public presentations of their work at national and international meetings. Through these presentation they often make contacts for postdoctoral study. By the time our students graduate they are first authors of numerous refereed papers.

We place great importance on the selection of external examiners for both Masters and Ph.D. theses. Although examiners for Masters theses tend to be drawn from relatively nearby universities, those for the Ph.D. are chosen as the most appropriate in the world. This practice has been beneficial for our students and for the Center as a whole. Our students are known by the time they graduate and have been very successful in obtaining positions in research institutions and Universities.

We could accommodate more postgraduate students, if we had the money to support them. As you are aware, the number of fellowships is decreasing. Few individual grants are large enough to support outright a postdoctoral fellow. We have many applications for positions, but are limited to those with fellowships and those whose salaries, paid in part from individual operating grants, can be supplemented by infrastructure funds. The number of postgraduate students has fluctuated over the years from as many as six to as few as two. **A list of those who will be in the Center in 1994-95 is appended along with the names of others who had hoped to receive funding from external agencies or the Center grant.**

### **Budget and Use of Center Funds**

At the outset, we must contradict the statement that management of the budget within the Center is inefficient. The only grounds that we can see for this statement is the possible ambiguity over how certain budget items were to be classified. It is important, however, to try to clarify again the confusion that was created at the time of our application by the differences in reporting systems used by the University Treasurer's Office and that used by FCAR. In our original submission of figures for 1991-1992 (page 41 of the application) the amounts in each category represented the total amount of money spent. For example, the Center budget prepared by us showed that two persons (Badiani and Leone) were paid in part from the Center grant as "Stagiaires Postdoctoral." The amount appearing in this category included the parts of the salary plus the benefits associated with the salary. The University had made a different categorization of these same people. They had included the salary (without benefits) paid to Badiani under "Stagiaires Postdoctoral" and had classified Leone with Tsibulski under "Professionnels de recherche"; benefits for all salaried individuals were lumped together under "Autres frais." In another case we had mistakenly used the category "visiteurs" for Tsibulski, the category required by our Department of Human Resources for documentation to permit entry to Canada. He was placed under "Professionnels de recherche" by the University. Following these corrections the University Treasurer's Office revised their categories in order to coincide with those of FCAR. The final corrected and revised report was sent to you in September 1993. We regret that this confusion arose. We sent explanations to FCAR, immediately, and the

Treasurer's Office made the changes in their statement to conform with the FCAR categories. (I am including copies of these documents for your information). Understandably, I am disturbed about the statement, in the Visiting Committee's report, that these matters were not cleared up. I assert strongly that the funds have been properly used and accounted for.

In addition to the fact that total salaries reported by us included benefits, there is perhaps another source of misunderstanding about the actual salaries and stipends paid to researchers and students. There seems to be an implication that people were not being paid as much as we said they were. This is puzzling and disturbing to us. Individuals are often paid from more than one source. For example, as stated previously, a student may receive a certain amount from the supervisor's individual research grant and a supplement from the Center grant. The student may not be aware of the division of sources. For example, in 1991-92 seven students were paid part of their stipends from the Center grant, but the total amount was relatively small compared to the amounts from other sources.

Another point that must be mentioned is the statement in the report of the Visiting Committee to the effect that students do not have sufficient funds to buy drugs to do their research. This is a preposterous statement. One only needs to see how active and productive the students are (their names on publications and presentations at meetings) to realize that something said, perhaps in discussions with students, must have been misinterpreted. If the Committee members actually thought that they had heard this, they most certainly should have raised it with the Director at the final meeting of the day. To introduce realism into the laboratories, students, as well as everyone else, are informed about the high cost of some rare and precious chemicals and biological materials. It would be a disservice to them not to tell them. They soon will have to deal themselves with the high costs associated with setting up a research laboratory. In fact, former students have often raised this point. Thus, the suggestion in the report that there are insufficient operating funds to carry out research is insupportable.

A final point can be made about on the comment that the budget presented in the application for the next period was unrealistic. In 1989, we received a grant for virtually the full amount that we had asked for, \$235,000/\$239,000. In view of our growth (as reflected in new members, potential new students, postdoctoral fellows, and

expensive new areas of study, such as those involving molecular biological techniques), and in view of the fact that we had had a fixed budget from FCAR for a five year period, we do not think that our budget submission was excessive.

### **Center Space and Facilities**

As was stated in the application and discussed with the Visiting Committee, the University is in the process of planning the renovation of a building in which the CSBN could be housed in the future. This space would have the practical advantage of being more centrally organized and specifically planned for the needs of the Center. This is not to say that our space as such now is inadequate to house the activities of the Center. We have expanded our space as we have developed and, therefore, have had to take space where and when it was available. The main point, however, is that the space is well equipped and workable; a great deal of fruitful research gets done in it.

Appendices are attached.

  
Jane Stewart  
April 30, 1994



Le 5 avril 1994

*Madame Jane Stewart  
Centre d'études en neurobiologie  
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*Madame,*

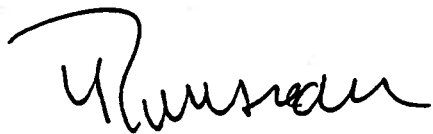
*La présente a pour objet de vous informer des résultats du concours 1994-1995 dans le cadre du programme Centres de recherche. Les recommandations financières relatives à cet exercice ont été récemment approuvées par le Conseil d'administration. Le Centre d'études en neurobiologie comportementale recevra une subvention de redressement au montant de 130 000\$ en crédits de fonctionnement pour les exercices 1994-1995, 1995-1996 et 1996-1997 et une subvention de 20 000\$ en crédits d'équipement. Cette décision est fondée sur le fait que des faiblesses importantes ont été identifiées lors de l'évaluation. En dépit de ces dernières, il ne fait pas de doute, cependant, que le Centre d'études en neurobiologie comportementale demeure un groupe de recherche important dont l'activité mérite d'être encore supportée par le programme. La subvention de redressement est accordée afin de permettre au Centre de corriger les faiblesses identifiées. Il sera donc très important que les changements opportuns aient été réalisés lorsque le Centre présentera une nouvelle demande d'octroi au terme de cette subvention de redressement.*

*Les crédits d'équipement octroyés au Centre seront versés à l'Université Concordia par le ministère de l'Éducation dans le cadre du plan quinquennal des investissements universitaires.*

*Vous trouverez ci-joint les commentaires formulés par le Comité de programme, le rapport du Comité visiteur ainsi qu'une copie des évaluations effectuées par les experts externes consultés. Je vous rappelle également que la subvention octroyée est soumise aux règlements concernant l'administration des crédits alloués par le Fonds FCAR et qu'elle est conditionnelle à l'approbation par l'Assemblée nationale du budget prévu pour notre organisme.*

*Je vous offre mes meilleurs vœux de succès dans la poursuite de vos travaux et vous prie d'agréer l'expression de mes sentiments les meilleurs.*

*Le directeur des programmes  
scientifiques,*

A handwritten signature in black ink, appearing to read 'Yves Rousseau', with a stylized, flowing script.

*Yves Rousseau*

*P.J.*

# **CENTRE D'ÉTUDES EN NEUROBIOLOGIE COMPORTEMENTALE**

**Université Concordia**

**95-CE-103**

**Directrice: STEWART, Jane**

Demande de renouvellement d'une subvention.

	SUBVENTIONS DEMANDÉES		SUBVENTIONS ACCORDÉES	
	FONCT.(\$)	ÉQUIP.(\$)	FONCT.(\$)	ÉQUIP.(\$)
1994-1995	395 440	158 331	130 000	20 000

**DÉCISION:**

Compte tenu des avis des experts externes, des remarques du Comité visiteur et considérant la recommandation du Comité de programme Centres de recherche, le Fonds FCAR a résolu d'octroyer une subvention triennale de redressement de 130 000\$ par année, à compter de l'exercice 1994-1995 et une subvention d'équipement de 20 000\$ pour l'acquisition d'un poste de travail Brain Wave 486-33 High Performance Laboratory System.

**RECOMMANDATIONS:**

Le Comité de programme Centres de recherche met particulièrement l'accent sur les points suivants:

- Chacun des thèmes d'études du Centre s'avère important pour le développement des connaissances fondamentales ainsi que pour ses applications dans différents domaines de la psychologie clinique et de la psychiatrie.
- L'ensemble du programme s'avère très ambitieux.
- Le programme proposé ne montre pas jusqu'à quel point les travaux à venir vont permettre de maintenir un haut niveau de contribution scientifique. Il faut pour cela se fier au passé des chercheurs seniors et au recrutement récent d'un jeune chercheur.

- Les scientifiques du CENC auraient avantage à diversifier encore plus leurs interrogations de recherche, d'une part, et leurs méthodologies expérimentales, d'autre part, afin de maintenir leur statut d'excellence dans le domaine de la neurobiologie comportementale.
- Sur le plan pratique, les chercheurs semblent travailler séparément, chacun dans son laboratoire; d'autre part, aucun plan concerté de développement des travaux n'a pu être clairement décelé.
- Le caractère multidisciplinaire des travaux semble faible à deux niveaux: 1. tous les chercheurs principaux sont rattachés au même département, à l'exception d'un qui est un ancien étudiant et 2. le niveau de collaboration entre les scientifiques donne l'impression qu'il y a peu de place pour cette multidisciplinarité. Il faut, toutefois, mentionner que le jeune chercheur recruté récemment semble contribuer à l'intégration de nouvelles technologies dans les travaux de plusieurs de ses collègues.
- Le recrutement additionnel de nouveaux chercheurs aux expertises et aux intérêts différents pourrait permettre de réaliser une alliance entre l'expérience des chercheurs plus chevronnés et le dynamisme de jeunes scientifiques.
- Le CENC disposerait donc d'une masse critique minimale pour lui permettre d'atteindre les objectifs fixés et pour assurer la stabilité du Centre, deux des huit chercheurs principaux ayant des activités de recherche périphériques relativement à la programmation du Centre.
- L'intégration des membres semble basée sur le partage des ressources matérielles dans un même espace physique qui ne peut être augmenté. Un effort sérieux devra donc être consenti afin de situer davantage l'intégration des chercheurs au niveau de collaborations intellectuelles qui se reflèteraient dans des publications conjointes.

- Une grande partie des activités d'animation scientifique sont très centrées sur les activités de chaque laboratoire. Aussi les membres du Centre sont encouragés à présenter une série structurée de séminaires, dédiés à tous les membres du CENC et diffusée aux autres groupes de recherche en milieu universitaire ou hospitalier.
- Les activités d'animation scientifique organisées par le Centre ne favorisent que très peu une intégration inter-laboratoires, encore moins les interrelations entre les universités ou autres centres dans le domaine.
- Le taux de diplomation par chercheur, pour une période de trois ans, se situe à une maîtrise et à moins d'un doctorat.
- Actuellement, les huit chercheurs principaux du Centre encadrent 11 étudiants à la maîtrise et 14 doctorants. La répartition des étudiants entre les chercheurs s'avère, cependant, très inégale.
- Le leadership de la directrice est peu marqué, puisqu'elle ne tente pas de donner une orientation forte ou nouvelle à la programmation de recherche, pas plus qu'elle n'essaie de clairement définir avec ses collègues une stratégie de maintien et d'expansion du CENC.
- Il n'est, pas apparu que la gestion du CENC avait un niveau d'efficacité satisfaisant.
- Les prévisions budgétaires indiquées dans la demande de subvention apparaissent peu réalistes.
- Le CENC figure en tête de liste dans les priorités de l'Université Concordia et les membres du Centre apprécient cet appui institutionnel.
- Le CENC est reconnu mondialement pour l'excellence de ses travaux sur le comportement motivé.

RESEARCH CENTRE PROGRAM

QUESTIONNAIRE

FISCAL YEAR 1994-1995

FILE NUMBER : 95-CE-103

NAME OF THE CENTRE : Centre d'études en neurobiologie comportementale

NAME OF THE DIRECTOR : STEWART, Jane

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FIRST CRITERION: THE QUALITY OF THE SCIENTIFIC PROGRAM

This is an application for infrastructure support. The major research areas and objectives are fully described but the individual projects are presented only succinctly.

Please comment on the following aspects and indicate the strengths and weaknesses you can identify.

- a) How pertinent, original and comprehensive are the proposed objectives and the main lines of research?
- b) Is there a relationship between the different lines of research?
- c) What are the most promising and valuable lines of research? How important will the expected results be?
- d) On the basis of your scientific knowledge of the field, is the research methodology favored by the Centre appropriate to meet the research objectives?

The group of scientists led, in this application by Jane Stewart, represents one of the most coherent and strong teams addressing issues in relation to drug addiction in North America. The group is continuing research traditions in areas of physiological psychology which in many ways were born in Canada. A study of motivation and reinforcement was initially put on the map by Olds and Milner in their classic studies of intra-cranial self-stimulation. From this emulated not only the most technically sophisticated work on ICSS but a generation of younger scientists working on a broad front to understand the anatomical, pharmacological and neurochemical bases of this critical brain system. They were quick to realise that the same system was likely to be involved in drug addiction. In parallel there were developments in learning theory, led by Bindra, which provided the theoretical underpinning of all of the work. Bindra's contribution, remains to me, undated and his work, the most important to our understanding of motivation. It has inspired a generation of physiological psychologists.

- a) the body of work proposed by the 12 contributions and their collaborations is comprehensive, continues the tradition of the group and contains extremely worthwhile bodies of research to  
/ continued

1993

(4)

FIRST CRITERION: THE QUALITY OF THE SCIENTIFIC PROGRAM (cont)

- (i) define the role of dopamine neurones in reward mechanisms, (ii) the interaction of drugs of addiction with this system, (iii) the role of interoceptive (e.g. hormones) and exteroceptive stimuli (e.g. stress) on components of the hypothalamic/limbic system involved in different aspects of motivated behaviour, (iv) the neurotransmitters involved in modulating these different systems.
- b) the relationship between the different lines of research is strong. The interests and focus of the individuals is likely to yield extensive cross fertilisation and collaboration both experimentally and theoretically, e.g. in terms of pharmacological mechanisms, relevant technical skills and theoretical interpretation.
- c) the results in the field of drug addiction are likely to be extremely important. It is good that across the group there are interests in a number of different classes of drugs with potential for abuse; opiates, cocaine, amphetamine, ethanol. While there are common features in the physiological basis of the addictive process with different drugs, e.g. activation of dopamine neurones, it is important to also explore differences. This will be important in applying the basic findings to the treatment of addictive behaviour.
- d) I would rate both the probability and level of success of this programme very highly. The methodologies proposed are appropriate and the level of technical competence of a number of the applicants is known to me and highly regarded.

(4)

THIRD CRITERION: THE STABILITY AND REPUTATION OF THE CENTRE

- a) What is your appreciation of the stability of the Centre regarding the cohesion of the research activities of its members, their sustained performance, and the quality of the recruited young researchers?

Please provide a qualitative assessment of these aspects with comments, indicating other similar centres you are using for comparison.

I am not aware of any personal problems between the applicants which is likely to impede the success of the programme. However, some of the younger workers are not known to me personally.

- b) How do you perceive the Centre's leadership and scientific influence in its field of research?

- . International level:
- . National level:
- . Provincial level:

Comments:



RESEARCH CENTRE PROGRAM

QUESTIONNAIRE

FISCAL YEAR 1994-1995

FILE NUMBER : 95-CE-103

NAME OF THE CENTRE : Centre d'études en neurobiologie comportementale

NAME OF THE DIRECTOR : STEWART, Jane

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FIRST CRITERION: THE QUALITY OF THE SCIENTIFIC PROGRAM

This is an application for infrastructure support. The major research areas and objectives are fully described but the individual projects are presented only succinctly.

Please comment on the following aspects and indicate the strengths and weaknesses you can identify.

- a) How pertinent, original and comprehensive are the proposed objectives and the main lines of research?
- b) Is there a relationship between the different lines of research?
- c) What are the most promising and valuable lines of research? How important will the expected results be?
- d) On the basis of your scientific knowledge of the field, is the research methodology favored by the Centre appropriate to meet the research objectives?

Sections a-d inclusive

See Attached

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I am pleased to forward the following report evaluating the Centre d'études en neurobiologie comportementale (CSBN) at Concordia University.

FIRST CRITERION: QUALITY SCIENTIFIC PROGRAM

- a) The central objective of the CSBN is to elucidate the neurobiological mechanisms mediating motivated behavior. I cannot think of another collection of scientists focussed specifically on this specific mission. The CSBN has assembled a unique and excellent collection of behavioral neuroscientists to work on this problem. Their combined expertise provides a comprehensive and interdisciplinary approach to this problem. They examine a wide range of motivated behaviors ranging from electrical self-stimulation of the brain to drug self-administration. They employ a range of sophisticated behavioral preparations and state-of-the-art techniques. This difficult problem addressed at the CSBN, the neurobiological mechanisms controlling motivation, is central to the understanding of the relationship between brain and behavior and is an important component of neuroscience research in general.
- b) The lines of research represented at the CSBN encompass several different important areas of motivation research, especially sexual behavior, drug self-administration, and electrical stimulation of the brain. There is sufficient overlap between the projects, in terms of both theoretical perspectives and techniques used, to allow for significant cross-fertilization and collaboration. One is unlikely to find a scientific group in the world as prepared, and with as much potential, to tackle the problem of the neurobiology of motivation.
- c) At present, and historically, the most promising and valuable lines of research at the CSBN has been the analysis of drug addiction and self-administration. The results emanating from the CSBN in this area have been internationally recognized consistently as important and first-class. The contributions made in the area of electrical self-stimulation of the brain run a close second. Recently, as indexed by faculty recruited to the Centre, there appears to be a greater emphasis on "natural" motivational states such as mechanisms involved in temperature regulation (Amir), eating (Woodside) and sex (Pfaus). These additions

complement the traditional strengths of the Center. The position of the Centre as the world's leading scientific collection studying the neurobiological bases of motivated behavior would be unquestioned, in my opinion, if the projects on natural motivations come to equal the stature of the drug and self-stimulation research lines. The seeds allowing this to happen have been sown. The only comment one might make is the relatively scant representation in a classic area of motivation research -- ingestive behavior (eating, drinking or salt intake) -- although the work of Woodside and some studies by other CSBN faculty address this issue.

- d) The research methodology used by Centre scientists is appropriate to meet their research objectives. I note the requests for equipment funds to purchase a neuron tracing system and an ELISA system. I strongly endorse these requests. Overall, the Centre has demonstrated its ability to maintain state-of-the-art equipment and methods and to use them productively. The recent recruitment of Pfau, and the molecular techniques he brings to the Centre, is an important addition.

(5)

THIRD CRITERION: THE STABILITY AND REPUTATION OF THE CENTRE

- a) What is your appreciation of the stability of the Centre regarding the cohesion of the research activities of its members, their sustained performance, and the quality of the recruited young researchers?

Please provide a qualitative assessment of these aspects with comments, indicating other similar centres you are using for comparison.

See Attached

- b) How do you perceive the Centre's leadership and scientific influence in its field of research?

- . International level: Excellent
- . National level: Outstanding
- . Provincial level: Outstanding

. Comments:

THIRD CRITERION: STABILITY AND REPUTATION OF THE CENTRE

- a) A core group of scientists (Amit, Shizgal, Stewart, Wise) have been at the Centre since its inception in the early 1980's. These individuals have provided a stable base and have demonstrated their ability to work together and effectively in the Centre structure. The Centre has recruited some excellent new faculty — the recent hiring of Amir and Pfaus are particularly noteworthy because they expand the range of motivated behaviors under examination and techniques being used. The Centre also maintains affiliation and collaborations with several others; these appear to be individuals who have been at the Centre previously or who received some training at the graduate or postdoctoral level at the Centre. In addition, some of the CSBN researchers maintain collaborations outside of the province. The only caveat to note is that there is a vast biomedical research community in Montreal and the level of interaction of CSBN members with these individuals perhaps could be more extensive.

The Centre is clearly regarded highly by Concordia University senior administration and has appeared to work out an amicable arrangement with the Department of Psychology, the home Department of most of the Centre investigators. The Centre attracts many visitors and hosts a strong and distinguished speaker series. The students in the Centre, from the various laboratories, are provided with formal and informal opportunities for interaction. FCAR funds appear to have been used effectively in maintaining the stream of graduate students, postdoctoral fellows, research associates and visitors to the Centre. This is an excellent use of such funds.

In sum, the Centre is a mature and stable institute with a consistent and impressive record in research and teaching. Some excellent junior investigators have been attracted to the Centre — suggesting that the excellence and the productivity of the Centre can be sustained. Some of the Centre faculty appear to be nearing retirement age; ultimately, the long-term success of the Centre will, as for all organizations, depend upon the continued success of the Centre in replacing these retirees. It may not be too early to begin consideration of the long-term plans of the Centre once these retirements begin.

PROGRAMME CENTRES DE RECHERCHE  
ÉVALUATION DES DEMANDES PRÉSENTÉES  
DANS LE CADRE DE L'EXERCICE 1994-1995

Numéro de dossier : 95-CE-103

Centre : Centre d'études en neurobiologie comportementale

Directrice : STEWART, Jane

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PREMIER CRITÈRE: LA QUALITÉ DE LA PROGRAMMATION DE RECHERCHE

Le dossier qui vous est transmis constitue une demande de support d'infrastructure. Il décrit les axes majeurs et les objectifs de la programmation de recherche du Centre. Les projets de recherche sont présentés de façon succincte et il n'y a pas lieu de faire l'analyse de chacun.

- a) Quelle est l'importance, le degré d'originalité et l'envergure des axes de recherche et des objectifs proposés?
- b) Existe-t-il une interrelation entre les différents axes de recherche?
- c) Quels sont les axes de recherche que vous considérez les plus valables et les plus prometteurs? Quelle est l'importance des résultats escomptés?
- d) Sur la base de vos connaissances, la méthodologie de recherche vous apparaît-elle appropriée pour atteindre les objectifs visés? Pouvez-vous déceler des faiblesses spécifiques dans la programmation du Centre?

- a) Ce centre de recherche de toute évidence constitue un pilier de la recherche en neurobiologie du comportement. De par l'originalité, la qualité et l'ampleur de sa productivité, il a acquis une réputation qui dépasse largement les frontières du pays. De par ses structures de fonctionnement, la diversité des méthodologies utilisées et par sa masse critique, ce centre constitue un milieu d'apprentissage privilégié pour de futurs chercheurs.

Le programme de recherche est sûrement d'envergure en ce qu'il vise à comprendre les interactions entre les milieux interne et externe dans l'élaboration du comportement motivé. Puisque tout comportement est probablement motivé, l'objectif global du programme est certes ambitieux. A cet effet, nous aurions aimé voir une description précise et claire des hypothèses et objectifs spécifiques sous-tendant les divers axes de recherche. La description de la programmation est surtout un compte-rendu de l'avancement des travaux.

- b) De par leur thème commun de recherche, il y a interrelation évidente entre la majorité de projets de recherche.

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## PREMIER CRITÈRE: LA QUALITÉ DE LA PROGRAMMATION DE RECHERCHE (suite)

②

- c) La recherche du docteur Wise demeure la locomotive des activités scientifiques de ce centre. La démonstration par celui-ci et ses collaborateurs du centre, que l'autostimulation, la dépendance aux drogues et, plus récemment, les renforcements naturels pouvaient avoir des bases anatomiques, physiologiques et neurochimiques communes constitue une percée importante dans la compréhension des substrats neurobiologiques du comportement. Les travaux plus récents portant sur les interactions entre le stress, le syndrome de sevrage et l'abus des drogues nous apparaissent particulièrement prometteurs. L'intégration du docteur Pfaus au centre nous semble heureuse puisqu'elle favorisera l'alignement des activités de recherche du centre aux découvertes et stratégies de la neurobiologie moléculaire.
- d) Il est clair que le centre possède l'expertise méthodologique requise pour la poursuite de ses travaux. Par ailleurs, il nous apparaît important de souligner une faiblesse potentielle dans la programmation de recherche. Cette faiblesse est peut-être la conséquence directe des succès de ce centre. En effet, depuis plusieurs années les activités furent centrées d'abord et avant tout sur l'implication privilégiée de la voie dopaminergique du mésoaccumbens dans le renforcement. Cet intérêt se reflète de façon évidente dans les multiples publications des membres du centre. Cette avenue de recherche fut très fructueuse : les résultats du centre ont clairement démontré que plusieurs conditions ou situations qui génèrent ou maintiennent le comportement de l'animal activent ce faisceau et que la dopamine et les opiacés sont impliqués dans cette activation. Il est maintenant bien établi que l'activation du noyau accumbens, région-pivot entre les systèmes limbique et moteur du SNC, soit impliquée dans la réponse de l'organisme à tout stimulus d'importance (positif ou négatif). Mais il nous semble que l'on doive agrandir le champ d'interrogations du centre. Par exemple, il faudrait maintenant voir comment les systèmes dopaminergiques de l'accumbens sont modulés par d'autres structures du SNC dont la voie mésocorticale dopaminergique qui a une influence inhibitrice sur le faisceau mésoaccumbens. On doit aussi mieux cerner la nature des interactions neurochimiques au niveau de l'accumbens en examinant, par exemple, les influences peptidergiques au niveau de l'accumbens. Une littérature de plus en plus importante démontre l'importance de ces influences. D'ailleurs, un membre collaborateur du centre, le docteur Rompré, a montré, sans qu'il y soit fait mention dans le programme de recherche, qu'un peptide, la neurotensine, affecte de façon marquée l'autostimulation chez l'animal.

L'élargissement de l'horizon scientifique du centre nous semble fondamental. A cet effet, on doit noter que l'intégration du docteur Amir constitue un pas dans la bonne direction.

(2)

## DIXIÈME CRITÈRE: LA STABILITÉ ET LE RAYONNEMENT DU CENTRE

Quelle est votre appréciation de la stabilité du Centre en termes de cohésion des activités du groupe de chercheurs, de performance soutenue et de qualité de la relève?

Veuillez fournir une appréciation qualitative avec commentaires, en comparant le Centre concerné avec d'autres Centres de recherche semblables.

- a) Il est clair que le leadership scientifique du centre est toujours exercé par le docteur Wise. Cela est normal si l'on considère l'impact majeur des découvertes de ce chercheur sur la neurobiologie du renforcement. Comme en atteste les nombreuses co-publications des chercheurs, la plupart des projets du centre, y compris ceux des chercheurs récemment recrutés, s'articulent autour de ce thème. La productivité globale du centre est excellente à la fois en termes de quantité et de qualité, et s'est bien maintenue au cours des années. Par ailleurs, comme nous le mentionnions précédemment, le centre a surtout ciblé ses efforts de recherche sur l'implication de la voie méso-accumbens dans la réponse de l'organisme aux renforçateurs de diverses natures. Ces efforts furent très fructueux. Par contre, dans une perspective à long terme, il nous semble que le centre devrait penser à diversifier ses interrogations de recherche et ses méthodologies expérimentales afin de maintenir son statut d'excellence dans le domaine de la neurobiologie comportementale. Le recrutement de nouveaux chercheurs ayant des intérêts différents de recherche en neurobiologie comportementale et capables de développer des programmes autonomes de recherche, serait souhaitable.

Quelle est votre perception du leadership du Centre et de son rayonnement scientifique dans son domaine de recherche?

- . Niveau international: x
- . Niveau national:
- . Niveau provincial:

Commentaires.

- b) Le centre a acquis depuis longtemps une réputation internationale. Les chercheurs et étudiants du centre publient dans des revues scientifiques de qualité et présentent leurs résultats dans des congrès internationaux prestigieux.



## Rapport du Comité visiteur

### ÉVALUATION DU CENTRE D'ÉTUDES EN NEUROBIOLOGIE COMPORTEMENTALE

Université Concordia

95-CE-103

#### HISTORIQUE

La demande de subvention présentée cette année par le Centre d'études en neurobiologie comportementale (CENC) de l'Université Concordia s'inscrit dans la catégorie des demandes de renouvellement selon la nomenclature en usage dans le programme Centres de recherche du Fonds FCAR.

Lors du concours 1989-1990, le Comité de programme recommandait qu'une subvention quinquennale de fonctionnement de 235 000\$ soit accordée au CENC, ce qui fut entériné par le Conseil d'administration du Fonds FCAR. Les commentaires du Comité de programme qui furent alors transmis aux principaux intervenants concernés se lisaient comme suit:

- Les travaux réalisés sous les auspices du Centre sont originaux et ont un impact important dans le domaine de la neurobiologie comportementale.
- Les méthodes et techniques utilisées par les chercheurs sont adéquates en regard des différentes problématiques abordées et les chercheurs du Centre ont su innover par le développement ou l'adaptation de certaines techniques.
- L'examen de la qualité des chercheurs a révélé que le Centre compte plusieurs éléments très forts et très peu d'éléments faibles. Le Groupe, dans son ensemble, a été jugé excellent.
- Les publications scientifiques dénotent une excellente productivité tant au point de vue de la qualité que du volume. La plupart des chercheurs publient couramment dans les revues les plus influentes du domaine et le Centre exerce réellement un leadership en neurobiologie comportementale.
- Le Centre est un lieu de formation qui offre à ses étudiants un encadrement et des activités de formation de qualité. De plus l'encadrement des étudiants est bien partagé entre les chercheurs.
- Le responsable du CENC est un chercheur de première qualité mais son leadership scientifique au sein du Centre mériterait d'être raffermi.
- Il serait souhaitable que le CENC songe à intégrer de nouvelles disciplines biologiques susceptibles d'apporter une contribution utile dans le cadre de sa problématique, notamment la biologie moléculaire et la psychopharmacologie.

## **VISITE D'ÉVALUATION - EXERCICE 1994-1995**

Le Comité de programme disposait cette année des avis de trois experts externes qui se sont prononcés sur la qualité de la programmation de recherche ainsi que sur celle des chercheurs oeuvrant au CENC.

Attendu que les commentaires des spécialistes consultés étaient dans l'ensemble positifs en ce qui concerne la programmation de recherche et la qualité des chercheurs, le Comité de programme Centres de recherche a décidé de former un Comité visiteur constitué de membres du Comité de programme seulement; c'est donc dire qu'aucun expert externe n'a été demandé pour rencontrer les membres du CENC. Le Comité visiteur, dont on trouvera la composition en annexe, s'est donc rendu au CENC le **17 novembre 1993**.

Au cours de cette visite, la directrice a d'abord présenté un bref historique du Centre, fait une mise à jour des renseignements contenus dans la demande de subvention et répondu aux questions des visiteurs. Six chercheurs principaux ont ensuite été interrogés individuellement. Ils ont été suivis par un groupe de 16 étudiants et un stagiaire postdoctoral, auprès desquels le Comité a recueilli des informations sur leur milieu de formation. Une visite des locaux a ensuite permis de rencontrer les chercheurs et quelques étudiants dans leur laboratoire de même que les professionnels de recherche et les techniciens oeuvrant au CENC.

## **AVANT-PROPOS**

*Le Comité visiteur chargé de rencontrer les membres du CENC ne comprenait aucun spécialiste externe au Comité de programme Centres de recherche. Aussi les deux premières sections de ce rapport, qui correspondent à deux critères d'évaluation: 1. la programmation de recherche et 2. la masse critique et la qualité des chercheurs, font essentiellement ressortir les points les plus importants qui ont été relevés par les spécialistes chargés d'évaluer le dossier de la demande de subvention du Centre, auxquels s'ajoutent quelques commentaires des membres du Comité visiteur qui ont rencontré les chercheurs du Centre.*

## **LA PROGRAMMATION DE RECHERCHE**

Le CENC a pour thème de recherche le comportement motivé. Deux grands axes de recherche s'articulent autour de ce thème:

L'axe 1. L'étude des incitateurs et des récompenses regroupe trois projets:

1. L'autostimulation intracérébrale (ASI);
2. L'effet de récompense des drogues;
3. Les stimuli naturels.

L'axe 2. Les changements dans les états physiologiques et le milieu interne réunit trois projets:

1. Les hormones et les signaux du système nerveux autonome;
2. Le stress;
3. Le syndrome de sevrage.

Dans leur dossier de présentation, les chercheurs du CENC ajoutent quatre projets qui peuvent avoir des applications pratiques:

1. Risque d'alcoolisme;
2. Extinction des toxicomanies;
3. Sensibilisation;
4. Anomalies du développement.

Le domaine de recherche du CENC est dans une période d'évolution rapide grâce aux progrès technologiques des neurosciences. Aussi, chacun des axes et des thèmes d'études des chercheurs du Centre s'avère-t-il important pour le développement des connaissances fondamentales ainsi que pour ses applications dans différents domaines de la psychologie clinique et de la psychiatrie.

Le programme de recherche proposé est de grande envergure puisqu'il vise à comprendre les interactions entre les milieux interne et externe dans l'élaboration du comportement motivé mais, tout comportement étant probablement motivé, l'ensemble du programme s'avère donc très ambitieux. À cet effet, les spécialistes consultés ont eu de la difficulté à évaluer la programmation future du Centre, le dossier présentant surtout un compte-rendu de l'avancement des travaux plutôt que des perspectives. Ils auraient souhaité trouver une description plus claire des hypothèses et objectifs sous-tendant les divers projets.

Les travaux réalisés au CENC depuis une dizaine d'années ont clairement contribué au développement des théories et des pratiques dans ce domaine de recherche. Le programme proposé ne montre pas, cependant, jusqu'à quel point les travaux à venir vont permettre de maintenir ce haut niveau de contribution scientifique. Il faut pour cela se fier au passé des chercheurs seniors et au recrutement récent d'un jeune chercheur.

Un effort important de diversification aurait été fait au cours des dernières années, les nouveaux chercheurs utilisant des méthodes complémentaires (dialyse, in situ, etc.) qui s'intègrent bien aux problématiques des membres plus établis, y ajoutant une dimension plus mécanistique. Les résultats obtenus, grâce à l'utilisation d'une approche multidisciplinaire, permettent une meilleure compréhension du fonctionnement complexe d'un système donné. Nonobstant ce commentaire,

les scientifiques du CENC auraient avantage à diversifier encore plus leurs interrogations de recherche, d'une part, et leurs méthodologies expérimentales, d'autre part, afin de maintenir leur statut d'excellence dans le domaine de la neurobiologie comportementale. Fait à noter, un commentaire similaire avait été fait lors de l'évaluation du CENC par le Fonds FCAR, il y a déjà cinq ans.

Sur le plan théorique, de par le thème commun de recherche, il y a une interrelation évidente entre la majorité des projets d'études au CENC. Sur le plan pratique, toutefois, les chercheurs semblent travailler séparément, chacun dans son laboratoire, bien qu'à l'occasion ils acceptent de se laisser influencer mutuellement. En effet, aucun plan concerté de développement des travaux n'a pu être clairement décelé, ni dans la demande de subvention, ni lors des rencontres avec les scientifiques du Centre. Compte tenu du succès des membres seniors du Centre, on peut comprendre cette attitude, mais il est risqué qu'à moyen et long termes elle conduise à l'appauvrissement de la programmation de recherche du CENC.

Le caractère multidisciplinaire des travaux semble faible à deux niveaux. D'une part, tous les chercheurs principaux sont rattachés au même département, à l'exception d'un qui est un ancien étudiant. D'autre part, le niveau de collaboration entre les scientifiques donne l'impression qu'il y a peu de place pour cette multidisciplinarité. Il faut, toutefois, mentionner que le jeune chercheur recruté récemment semble contribuer à l'intégration de nouvelles technologies dans les travaux de plusieurs de ses collègues.

Le recrutement additionnel de nouveaux chercheurs aux expertises et aux intérêts différents pourrait permettre de réaliser une alliance entre l'expérience des chercheurs plus chevronnés et le dynamisme de jeunes scientifiques. Bien que le département de psychologie ne semble pas être en mesure d'engager de nouveaux professeurs à court terme, les membres du CENC pourraient recruter de nouveaux collaborateurs dans d'autres départements ou dans d'autres universités ou centres hospitaliers de la région montréalaise.

### **LA MASSE CRITIQUE ET LA QUALITÉ DES CHERCHEURS**

Le CENC compte huit chercheurs principaux (plus de 75% de leurs activités de recherche sont reliées à la programmation du Centre). L'un d'eux est encore en émergence, c'est-à-dire qu'il a obtenu son doctorat depuis moins de cinq ans et que son dossier s'avère insuffisant pour permettre un jugement. De l'avis des experts consultés, cinq de ces scientifiques seraient classés dans les catégories très bon, excellent ou exceptionnel selon les barèmes en usage dans le cadre du programme Centres de recherche du Fonds FCAR, alors que deux autres membres seraient plus faibles.

Le CENC disposerait donc d'une masse critique minimale pour lui permettre d'atteindre les objectifs fixés et pour assurer la stabilité du Centre, deux des huit chercheurs principaux ayant des activités de recherche périphériques relativement à la programmation du Centre. Ceci représente une situation relativement risquée et des correctifs devraient être apportés dans les plus courts délais.

L'intégration des activités des chercheurs se situe surtout sur le plan des collaborations techniques et du partage de l'espace attribué au CENC; de plus, il y a peu de directions conjointes d'étudiants. D'autre part, deux investigateurs principaux n'ont pas leur laboratoire dans les locaux du Centre. L'intégration de ces deux membres pose problème présentement; ce sera donc difficile, dans le contexte actuel, d'intégrer de nouveaux membres provenant d'autres établissements. Le problème vient peut-être du fait que l'intégration des membres semble basée sur le partage des ressources matérielles dans un même espace physique qui ne peut être augmenté. Un effort sérieux devra donc être consenti afin de situer davantage l'intégration des chercheurs au niveau de collaborations intellectuelles qui se reflèteraient dans des publications conjointes.

Les membres du CENC obtiennent d'excellentes subventions, surtout individuelles. Ils auraient certainement avantage à augmenter leurs efforts pour obtenir encore plus d'octrois en provenance d'organismes subventionnaires des Etats-Unis.

### **LA FORMATION ET L'ENCADREMENT DE CHERCHEURS**

Le CENC organise environ deux grands séminaires par année pour les étudiants des 2e et 3e cycles. Des séminaires informels sont aussi organisés les vendredi après-midi pour l'ensemble des membres du Centre. Lorsque des conférenciers invités par le CENC, le département de psychologie ou le Centre de recherche en développement humain (CRDH) présentent une conférence le jeudi, ils participent aussi à la réunion du vendredi. Des réunions hebdomadaires se font également dans les laboratoires de chaque chercheur.

Les membres du Comité visiteur constatent qu'une grande partie des activités d'animation scientifique sont très centrées sur les activités de chaque laboratoire, aussi incitent-ils les membres du Centre à présenter une série structurée de séminaires, dédiés à tous les membres du CENC et diffusée aux autres groupes de recherche en milieu universitaire ou hospitalier. Une telle activité favorise les échanges entre les scientifiques et s'avère un excellent moyen de formation.

Le CENC permet aux étudiants de réaliser des stages de recherche dans d'autres universités en Amérique du Nord et dans des établissements hospitaliers.

Le nombre d'étudiants diplômés au sein du CENC, durant la période de 1990-1993, est plutôt faible (9 à la maîtrise et 5 au doctorat), compte tenu du nombre de chercheurs principaux. Le taux de diplomation par chercheur, pour une période de trois ans, se situe, en effet, à une maîtrise et à moins d'un doctorat.

Actuellement, les huit chercheurs principaux du Centre encadrent 11 étudiants à la maîtrise et 14 doctorants. La répartition des étudiants entre les chercheurs s'avère, cependant, très inégale, l'implication de certains membres étant élevée et d'autres relativement faible en ce qui concerne l'encadrement des étudiants; un problème que les principaux intervenants concernés devront tenter de solutionner très rapidement, d'autant plus que cette situation dure depuis quelques années déjà.

Les membres du CENC disent avoir de la difficulté à attirer des étudiants gradués à cause de la concurrence d'autres universités et de l'attrait exercé par la recherche clinique dans le domaine de la psychologie. Ils n'ont pas non plus recruté beaucoup de boursiers (5 à la maîtrise et 1 au doctorat).

Dans l'ensemble, les étudiants rencontrés (16 sur une possibilité d'une trentaine) n'ont pas formulé de critiques majeures vis-à-vis de l'encadrement fourni par les membres du Centre, si ce n'est la désuétude de certains équipements et le manque de ressources financières pour avoir des drogues en quantité suffisante pour leurs recherches.

Des interactions entre les chercheurs, les professionnels de recherche, les stagiaires postdoctoraux (Ils ne sont plus que deux au Centre) et les étudiants gradués se réalisent surtout au sein de chaque laboratoire. Les activités d'animation scientifique organisées par le Centre ne favorisent que très peu une intégration inter-laboratoires, encore moins les interrelations entre les universités ou autres centres dans le domaine.

### **L'ORGANISATION ET LA GESTION DU CENTRE**

Le CENC est dirigé par une scientifique très respectée dans son domaine de recherche. Il est ressorti des entrevues avec la directrice et avec six des sept autres chercheurs principaux du Centre, que le leadership de la directrice devrait être plus marqué, en donnant une orientation forte ou nouvelle à la programmation de recherche et en définissant plus clairement avec ses collègues une stratégie de maintien et d'expansion du CENC.

Selon le texte de la demande de subvention du CENC, il existe au Centre un conseil de direction qui est, en fait, l'assemblée des huit chercheurs principaux. La directrice en est la gestionnaire et elle est secondée dans ses fonctions par un adjoint administratif et deux secrétaires. Cette structure, relativement simple, permet normalement le fonctionnement efficace d'un Centre doté de fonds de recherche aussi importants que ceux dont dispose le CENC. Il n'est, toutefois, pas apparu au Comité visiteur que la gestion du CENC avait un niveau d'efficacité satisfaisant. Par exemple, il n'a pas été possible de connaître exactement les mécanismes de prises de décisions concernant l'ensemble du Groupe ni la façon dont les budgets d'infrastructure sont distribués entre les chercheurs et/ou entre les différents postes budgétaires.

Les prévisions budgétaires indiquées dans la demande de subvention totalisent 395 000\$. Elles apparaissent peu réalistes si on prend plus particulièrement en considération deux aspects de la question. Premièrement, il a été très difficile de bien comprendre comment a été utilisée la subvention FCAR-Centres attribuée au CENC (235 000\$ par année au cours des cinq dernières années), les rapports financiers étant confus et les explications verbales fort peu précises. Deuxièmement, les sommes présentées à certains postes budgétaires n'ont pas été justifiées de façon satisfaisante. Ainsi, les étudiants rencontrés ont dit être moins nombreux que ce qui est indiqué dans la demande et recevoir un appui financier provenant surtout de leur directeur de mémoire ou de thèse et très peu du Centre, ce qui diffère des informations contenues dans le dossier du Centre. D'autre part, le Centre prévoit recevoir sept stagiaires postdoctoraux alors qu'il n'y en a que deux qui travaillent présentement au CENC.

Les chercheurs du Centre s'avèrent fort bien financés sur une base individuelle, surtout pas le CRSNG, le CRM, le Fonds FCAR et le FRSQ. La subvention FCAR-Centres fournit un apport très important au support financier collectif. Le Comité visiteur encourage, néanmoins, les scientifiques du Centre à tenté d'obtenir davantage de soutien de la part d'agences gouvernementales aux États-Unis.

Le CENC ne dispose d'aucune installation collective, si ce n'est de l'animalerie qui est essentielle pour les activités de tous.

### **LA PLACE DU CENTRE DANS L'ÉTABLISSEMENT**

Le CENC figure en tête de liste dans les priorités de l'Université Concordia. L'institution songe, d'ailleurs, à intégrer le Centre dans les objectifs à promouvoir à l'occasion de sa prochaine campagne de financement.

L'Université accorde présentement près de 74 000\$ aux membres du Centre en dégageant d'enseignement, 30 000\$ en salaires pour les professionnels, la moitié du salaire du coordonnateur, un technicien et deux secrétaires. Le nouveau professeur engagé récemment a reçu des fonds de démarrage importants et s'est vu doté d'un laboratoire aménagé à neuf. L'animagerie vient d'être rénovée et l'Université a contribué pour 128 000\$ aux achats d'équipement au cours des cinq dernières années. L'appui financier de l'Université Concordia au CENC s'avère donc très important.

Les membres du Centre sont pleinement conscients de l'appui institutionnel reçu et ils l'apprécient.

### **LE RAYONNEMENT DU CENTRE**

Le CENC est reconnu mondialement pour l'excellence de ses travaux sur le comportement motivé. Chercheurs et étudiants publient dans des revues scientifiques de renom et présentent les résultats de leurs expériences dans des congrès internationaux prestigieux.